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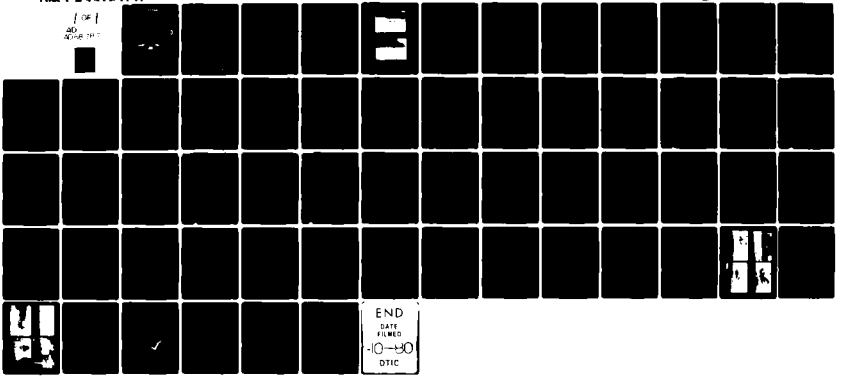

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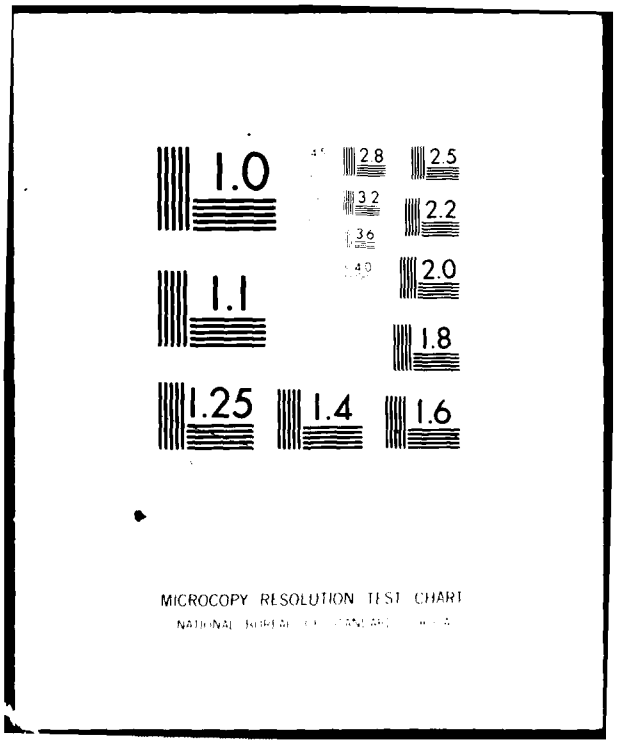
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LEVEL II

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POTOMAC RIVER BASIN
GILBERT RUN, CHARLES COUNTY

MARYLAND

JAMESON DAM

NDI ID NO. MD 38

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM.

Jameson Dam (NDI I.D. Number MD-38) Potomac River Basin, Gilbert Run, Charles County, Maryland. Phase I Inspection Report.

(15) DACW31-79-C-0038

PREPARED FOR

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND 21203

BY

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PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Department of the Army, Office of Chief of Engineers, Washington, D.C. 20314.

The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon visual observations and review of available data. Detailed investigation and analyses involving topographic mapping, subsurface investigations, material testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the inspection is intended to identify any need for such studies which should be performed by the owner.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of the dam depends on numerous and constantly changing internal and external factors which are evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the spillway design flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The spillway design flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE 1 REPORT
NATIONAL DAM INSPECTION PROGRAM

NAME OF DAM: Jameson Dam
STATE LOCATED: Maryland
COUNTY LOCATED: Charles
STREAM: Gilbert Run, a small tributary of the Potomac River
DATE OF INSPECTION: March 21, 1979, and April 24, 1979
COORDINATES: Lat. 38° 30.8', Long. 76° 48.5'

ASSESSMENT OF GENERAL CONDITIONS: Based on the evaluation of available design information and visual observations of conditions as they existed on the dates of the field reconnaissances, the general condition of Jameson Dam is considered to be fair.

Transported silt-sand soil was observed deposited in the area of the seepage blanket drain outlets. Due to the pipeable nature of the embankment soils, seepage discharge should be periodically observed to determine if embankment soils are being transported. The seepage flows are not considered to represent a significant hazard relative to the overall stability of the dam at the present time.

Based on review of design documents and visual observations, there is concern the emergency spillway channel will undergo severe erosion when activated by large flood flows. A study to evaluate the erosion potential of the spillway channel should be implemented by the owner.

The reservoir drain slide gate was found inoperable and is judged inadequate in its present condition. Appropriate maintenance and/or repairs should be performed as soon as possible.

Jameson Dam is classified as an "intermediate" size, "high" hazard dam according to guideline criteria. Based on Soil Conservation Service hydrological/hydraulic design computations, spillway capacity was found adequate to pass 100 percent of the PMF. Therefore, spillway capacity is in accordance with recommended guideline criteria.

It is recommended the following be implemented as soon as possible:

1) Implement study to evaluate spillway channel erosion potential. Develop remedial treatment measures to reduce risk of erosion.

2) Monitor wet zones located at toe of downstream embankment for change in conditions, and discharge from seepage blanket drains for evidence of transported embankment soils.

3) Repair and maintain the outlet pipe slide gate.

4) Develop a formal flood surveillance and warning plan.

5) Remove woody vegetation and trees from emergency spillway inlet, channels, and embankment slopes. Repair eroded gullies and footpaths on embankment slopes, and fill in shallow depressions on dam crest.

6) Improve drainage gradient of seepage diversion channel.

James D. Hainley, P.E. 14 June 79
James D. Hainley, P.E. Date
Maryland Registration No. 5284
Vice President

Timothy E. Debes 14 June 79
Timothy E. Debes Date
Project Engineer

APPROVED BY: 25 Jun 79
G. K. WITHERS Date
Colonel, Corps of Engineers
District Engineer

JAMESON DAM

Upstream Face

Downstream Face

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PHASE 1 REPORT
NATIONAL DAM INSPECTION PROGRAM
JAMESON DAM
NATIONAL I.D. NO. MD 38

1.1 General

a. Authority. The study was performed pursuant to the authority granted by The National Dam Inspection Act, Public Law 92-367, to the Secretary of the Army, through the Corps of Engineers, to conduct inspections of dams throughout the United States.

b. Purpose. The purpose of this study is to evaluate if the dam constitutes a hazard to human life or property.

1.2 Description of Project

a. Dam and Appurtenances. Jameson Dam was designed as a homogeneous earthfill structure. The dam is approximately 950 ft. long, has a maximum toe to crest height of 37 ft., and a crest width of 15 ft. Upstream and downstream embankment slopes have inclinations of 3H:1V and 2.5H:1V, respectively.

According to design drawings, seepage control provisions include an 800 ft. long trench drain and a 50 ft. wide blanket drain. The sand and gravel constructed drains are located in the downstream toe of the dam embankment. Seepage, intercepted by the trench drain and collected by the blanket drain, is diverted downstream of the embankment toe by means of a shallow diversion channel to the outlet pipe plunge pool.

Flood discharge facilities consist of a concrete principal spillway riser and a 100 ft. wide emergency spillway. The principal spillway intake works include a low stage 1.5'x4.0' orifice and two (2) high stage 12 ft. wide overflow weirs. All principal spillway inlets are protected with trash racks. Outlet works consist of an Armco 30-05C slide gate and a 48 in. dia. reinforced concrete pipe. The outlet slide gate is operated by a stem and lifting nut mechanism and provides for non-emergency drawdown of the reservoir through the outlet pipe. The outlet pipe is connected to the base of the principal spillway riser and discharges into a 30 ft. wide plunge pool lined with riprap.

b. Location. Jameson Dam is located on Gilbert Run, a small southwest-flowing tributary of the Potomac River, approximately 2.5 miles southwest of Hughesville, MD. (Refer to Location Plan, Appendix D.) Dam coordinates are Lat. 38^{o} 30.8', Long. 76^{o} 48.5'.

c. Size Classification. Based on a maximum dam height of 37 ft. and a maximum storage capacity of 2,900 acre-ft., the dam facility is accordingly classified in the "intermediate" size category.

d. Hazard Classification. Loss of life would likely result in the event of a dam failure. Considerable damage could also occur to residential and farm properties. Therefore, the dam is accordingly classified as a high hazard.

e. Ownership. The Gilbert Run Public Watershed Association, Box 356, La Plata, MD, is legally responsible for the operation and maintenance of Jameson Dam. The dam was constructed by easement of private properties.

f. Purpose of Dam. The primary purpose of Jameson Dam is flood water retention.

g. Design and Construction History. The dam was designed by the Soil Conservation Service, Engineering and Watershed Planning Unit, Upper Darby, PA in 1960. Construction began in May 1962 under the direction of the Soil Conservation Service, and was completed June 1964.

h. Normal Operating Procedure. The dam operates as an uncontrolled structure. The reservoir is normally maintained at Elev. 119.2 MSL, the level of the uncontrolled low stage intake orifice of the principal spillway riser.

1.3 Pertinent Data

a. Drainage Area — 4.3 sq. mi.

b. Discharge at Dam Facility

Maximum known flood at dam facility	unknown
Ungated spillway capacity at design high water elevation -	1,060 cfs
Ungated spillway capacity at top of dam elevation	8,900 cfs

c. Elevation (feet above MSL)

Constructed top of dam	El. 141.0
Design high water	El. 136.0
Normal pool	El. 119.2
Emergency spillway crest	El. 133.0
Principal spillway high stage	El. 127.5
Principal spillway low stage	El. 119.2
Maximum tailwater	Unknown
Upstream invert of outlet pipe	El. 106.0
Downstream invert of outlet pipe	El. 104.0
Streambed at centerline	El. 105.0±

d. Reservoir Length

Length of design high water pool	Approx. 1.7 mi.
Length of normal pool	Approx. 0.75 mi

e. Total Storage

Constructed top of dam	2,900 ac.-ft.
Design high water	1,750 ac.-ft.
Emergency spillway crest	1,290 ac.-ft.
Principal spillway high stage	606 ac.-ft.
Principal spillway low stage	265 ac.-ft.
Normal pool level	265 ac.-ft.
Sediment pool	265 ac.-ft.

f. Reservoir Surface

Constructed top of dam	217 ac.
Design high water	168 ac.
Spillway crest	141 ac.
Normal pool	47 ac.
Sediment pool	47 ac.

g. Dam

Type	Homogenous earthfill
Length	950 ft.
Height	37 ft.
Top width	15 ft.
Side slopes	
Downstream	2.5H:1V
Upstream with 10 ft. wide bench	3.0H:1V
Impervious core	None
Cutoff provisions	Compacted cutoff trench
Grout curtain	None

h. Regulating Outlet

Type	Concrete intake riser and 48 in. dia. R. C. outlet pipe
Riser Height	25.5 ft.
Riser Dimensions	6.5' x 14.5 ft.
Length of connecting outlet pipe	Approx. 102 ft.
Gates	Armco 30-05C slide gate

i. Spillway

Type	Trapezoidal open earth channel
Width	100 ft.
Crest elevation	133.0 ft.
Gate	None
Upstream channel	Vegetated earth with a negative 1.0% slope
Downstream channel	Vegetated earth with a positive 2.5% slope
Length of channel	500 ft., curved

SECTION 2
DESIGN DATA

2.1 Design

a. Data Available

(1) Hydrology and Hydraulics. Design calculations, rating curves, and flood hydrographs were obtained from Soil Conservation Service design report, Gilbert Run Watershed Flood Detention Structure No. 3, dated May 20, 1960.

(2) Embankment. Available information includes detailed design drawings, construction specifications, boring logs, and geologist's report. Information obtained from report identified in Section 2.1-a(1) and Construction and Material Specifications for Gilbert Run Watershed, Flood Detention Structure No. 3, prepared by U. S. Dept. of Agriculture.

(3) Appurtenant Structures. Available information includes design drawings, construction specifications, and principal and emergency spillway design calculations. Information obtained from reports identified in Section 2.1-a(2).

b. Design Features. Principal features of the dam embankment and appurtenant structures are illustrated on Plates 1 through 5. A description of design features is also discussed in Section 1.2, "Description of Project." Dam and appurtenances are designed in accordance with Soil Conservation Service, structure classification "C" criteria.

(1) Embankment. According to design documents, the dam embankment and cutoff trench are constructed of low to non-plastic silt-sand earthfill obtained from within the reservoir site area. The earthfill cutoff trench, located 20 ft. downstream from the upstream embankment toe, is constructed 12 ft. below the original streambed elevation. The cutoff trench is 750 ft. long, has a 12 ft. wide base, with side slope inclinations of 1.5H:1V. The dam embankment overlies the Calvert Formation, which consists primarily of dense, fine, clayey silts and sands.

(2) Appurtenant Structures. The principal appurtenant structures of the dam consist of a principal spillway riser and an emergency spillway channel. Details of the intake riser and spillway channel are shown on Plates 1, 3, 4, and 5.

Principal spillway outlet works include a 48 in. dia. R. C. outlet pipe constructed with five (5) equally spaced anti-seep collars. The outlet pipe is supported by a concrete cradle through the dam embankment. A concrete cradle, pile bent, and two (2) cast concrete piles are used to provide support of the pipe outlet at the location of the plunge pool.

The principal spillway riser is 25.5 ft. in height and 6.5x14.5 ft. in exterior dimension. Trash rack provisions include a steel reinforcement bar and angle iron cage for the low stage orifice, and four (4) galvanized pipe cross pieces for each high stage overflow weir. Water entering the principal spillway riser flows vertically down the riser, through the 102 ft. long outlet pipe, and into the 30 ft. wide plunge pool.

The emergency spillway consists of a trapezoidal natural earth channel with a crest elevation of 133.0 ft. Spillway embankment slopes have inclinations of 3H:1V. According to test boring information, spillway channels are underlain by loose to semi-consolidated silt-sand mixtures and clayey silts. Spillway flow is discharged approximately 200 ft. downstream of the dam into the natural stream channel.

2.2 Construction. Based on review of available design documents and field observations, it may be concluded the dam was constructed in general accordance with the intended design drawings and specifications. No unusual construction difficulties were reported.

2.3 Operation. The Gilbert Run Public Watershed Association is responsible for the operation of Jameson Dam. The principal and emergency spillways are uncontrolled structures. No performance or operation records are maintained. The only operational feature is a mechanical slide gate used to provide non-emergency regulation and drawdown of the reservoir. According to Soil Conservation Service officials, the slide gate is infrequently exercised.

2.4 Evaluation

a. Availability. All available design information and drawings were provided by the Dam Safety Division, Maryland Water Resources Administration and the Soil Conservation Service.

b. Adequacy. The design data provided is reasonably documented and is considered adequate to evaluate the dam and appurtenant structures in accordance with the scope of a Phase 1 study.

c. Validity. At this time, there is no observable evidence or reason to question the validity of the available design information and drawings.

SECTION 3
VISUAL INSPECTION

3.1 Findings

a. General. The on-site reconnaissance of Jameson Dam consisted of:

1. Visual observations of the earth embankment, abutment, and spillway structures.

2. Visual observation of exposed sections of the concrete principal spillway riser, slide gate mechanisms, outlet pipe, reservoir, and plunge pool.

3. Visual observations of discernible hazardous conditions or safety deficiencies.

4. Evaluation of the downstream hazard potential.

Visual surveys were performed during periods when reservoir and tailwater were at normal pool levels.

A visual observation check list and field sketch are given in Appendix A.

In general, visual observations indicate the dam is marginally maintained. The overall condition of the dam is considered to be fair at the present time.

b. Embankment

1. Embankment Surface. Dam embankment slopes are vegetated with an established stand of grass and appear stable. Woody vegetation is evident between the mid-slope and crest of the upstream embankment. Small animal burrows and tree stump holes were observed scattered over the downstream embankment slopes, as were cut tree stumps left in place.

2. Erosion. Tire ruts, approximately 0.2 ft. deep, are located along the top of the dam crest. Eroded gullies, about 0.5 ft. deep, were noted leading from the dam crest to the principal spillway riser, and to the emergency spillway on the west dam abutment. The eroded gullies are attributed to heavy foot and motorbike traffic and subsequent erosion by surface drainage. A shallow, dished depression, less than 0.2 ft. deep, is located on the dam crest, near the west abutment. The formation of this depression is believed due to vehicular and foot traffic.

3. Seepage. As shown on the field sketch, a moderate volume of seepage was observed emanating from the toe of the downstream slope. This seepage was observed clear, but had apparently transported a fine sand material, as evidenced by small sand deposits. The location of the seepage sources approximately correspond to the "as-built" location of the blanket drain. Therefore, it is assumed the seepage originates from this outlet drain. It is further suspected the fine sand deposit is a transported product of the filter drain material.

4. Wet Zone. Wet zones were observed about the mid-length of the dam near the vicinity of the old streambed, and along side the seepage diversion channel. These wet zones are believed the result of seepage water ponding in the diversion channel. Dense vegetation growth and a poor drainage gradient appear to obstruct and restrict channel flow to almost a standstill.

c. Appurtenant Structures

1. Emergency Spillway. The upstream approach channel is obstructed with a dense strip of small trees and woody vegetation. Spillway channel bottoms, abutments, and side slopes are vegetated with a loosely rooted grass. The soil cover complex in this area consists of silt-sand material. Channel side slopes approximate a 3H:1V inclination and appear stable.

2. Principal Spillway Riser. There was no apparent evidence of spalling or cracking of exposed concrete surfaces. The slide gate control stem, lifting nut, and collar supports appeared slightly rusted, but in good condition. However, the slide gate could not be raised even with the efforts of three people. In addition, the stem shaft extends above the top of the spillway riser by only a few inches. Hence, the leverage that can be applied to rotate the stem shaft is severely limited.

3. Outlet Works. Seepage, flowing at an estimated rate of about 0.5 gpm, was observed emanating from underneath the outlet pipe. A fine silty sand material was observed deposited in the vicinity of this seepage discharge. Plunge pool embankment slopes are lined with rock riprap, and appear stable. The plunge pool and immediate downstream channel were observed free of debris and flow obstructions. Exposed sections of the concrete outlet pipe and support cradle reveal no visual evidence of spalling or cracking.

d. Reservoir Area. Visual observations and a map review indicate the immediate reservoir area is predominately covered with woodlands. Reservoir slopes and shorelines are well covered with trees and vegetation and appear stable. No observable evidence was found of landslides or significant siltation which might affect the flood storage capacity of the reservoir or operation of the outlet slide gate.

The three (3) streams feeding the reservoir have stable channel banks, cobble lined bottoms, and reportedly transport limited quantities of silt. The clearness of the reservoir water and discharge from the outlet pipe substantiate this report.

e. Downstream Channel. The downstream channel is cobble lined, stable, and about 10 ft. in width. Channel banks are covered with a thick growth of vegetation and small trees. The immediate downstream channel reach was observed free of debris and flow obstructions. The plunge pool channel drains into Gilbert Run Creek which flows approximately 10 miles to the Wicomico River. About six (6) inhabited residences are located within the estimated flood plain of Gilbert Run Creek. One (1) inhabited house is located 800 ft. directly downstream of the dam.

3.2 Evaluation

a. Embankment. The seepage observed at the downstream embankment toe is believed originating from seepage blanket drains. As previously reported, the seepages were observed clear, but have apparently transported a silt-sand material, as evidenced by small deposits. Since embankment materials consist of silt-sand soils, which are considered very susceptible to piping, periodic observation of seepage discharge is recommended.

The observed wet zones, located along the seepage diversion channel and in the vicinity of the old streambed, are attributed to poor drainage as previously noted. These wet zones are not considered to represent a significant hazard to dam stability as they presently exist, although they should be observed for change in conditions. In summary, observed deficiencies are minor, and generally surficial in scope. Overall, the general condition of the dam embankment is considered to be good.

b. Appurtenant Structures. The grass covering the emergency spillway channel is loosely rooted in silt-sand soils. In the event of high flood flows activating the spillway, there is concern the grass cover and silt-sand channel bottom will be subject to severe erosion. There is further concern the erosion may be severe enough to breach the spillway-dam abutment. The general condition of the spillway channel is therefore considered poor.

The reservoir drain slide gate was found inoperable and is judged inadequate in its present condition. The principal spillway riser and outlet pipe appear to be functioning as designed and are considered to be in good condition.

The seepage observed emanating from underneath the outlet pipe structure is attributable to a seepage blanket drain outlet. Periodic observation of the seepage flow is advised as a precautionary measure.

SECTION 4
OPERATIONAL FEATURES

4.1 Procedure. Normal operating procedure does not require a dam tender. Reservoir level is generally maintained by the uncontrolled low stage orifice of the principal spillway riser. The only operational feature of the dam is a slide gate, used to drain and/or lower the reservoir pool level for non-emergency purposes. This slide gate is normally kept closed.

4.2 Maintenance of Dam. Dam embankments are maintained by the Gilbert Run Public Watershed Association with the assistance of the Soil Conservation Service. According to local Soil Conservation Service officials, maintenance usually consists of cutting grass, removing small trees and brush from embankment slopes, repairing worn foot paths and eroded gullies, removing trash from dam premises, and clearing debris from the trash racks. Maintenance is generally performed on an annual basis.

4.3 Inspection of Dam. Operation and Maintenance Inspection Reports are usually prepared by the Soil Conservation Service, on an annual basis. The inspections are performed at the request of the Gilbert Run Public Watershed Association. Inspections generally consist of visually examining the dam embankment, appurtenant structures, reservoir area, and outlet channel, and providing recommendations for needed remedial repairs.

4.4 Maintenance of Operating Facilities. There is no record of how often the slide gate is maintenanced or exercised. Reportedly, the slide gate was greased and exercised during the summer of 1978. However, on the date of the field reconnaissance, the slide gate was found inoperable.

4.5 Warning Systems in Effect. There is no warning system or formal emergency procedure to alert or evacuate, as necessary, downstream residents in the event or threat of a dam failure.

4.6 Evaluation. In general, maintenance, operational, and inspection procedures at Jameson Dam are marginally adequate. This evaluation is based on the apparently inoperable condition of the slide gate, the surficial deficiencies described in Section 3.1., and the absence of a formal flood surveillance and warning plan.

SECTION 5
HYDROLOGY/HYDRAULICS

5.1 Evaluation of Features

a. Design Data. Jameson Dam impounds a reservoir with a surface area of 47 acres and a normal pool volume of 265 acre-ft. The dam site watershed area covers 2,752 acres, and ranges in relief from about El. 194 to El. 119.2 at normal pool level. Soil cover complex consists predominately of woodland and open pasture. According to photorevised quadrangle maps there are no upstream dams or lakes, only a few small farm ponds.

The principal spillway orifice is designed to pass the normal base flow and the 10-year frequency storm. The high stage overflow weirs are set at the maximum stage level of the 10-year frequency storm and pass their peak discharge of 295 cfs when the reservoir pool is at the emergency spillway crest level. The emergency spillway crest is set at the 100-year frequency storm stage and is activated when runoff exceeds 5.0 in. The spillway has a discharge of 1,060 cfs at the design high water stage and a maximum discharge of 8,900 cfs at designed top of dam. Top of dam elevation was based on Maryland State freeboard criteria.

The required spillway design flood for the dam facility is the PMF. The PMF was selected based on the "intermediate" size "high" hazard classification of the dam. Top of dam and emergency spillway hydraulic capacity is sized to pass a flood corresponding to 25.6 inches of runoff in 6 hours. Soil Conservation Service flood routing data indicates the 25.6 inches of runoff produce a peak inflow of 14,700 cfs.

The reviewed hydrological/hydraulic design information is in general accordance with accepted engineering practice and is considered adequate for the scope of a Phase 1 study.

b. Experience Data. No records are kept of reservoir level elevations or rainfall amounts. The storm of record for this area is Hurricane Connie which occurred in August 1955. Soil Conservation Service routing calculations indicate if the dam had been constructed at that time, the maximum flood stage would have been Elev. 133.6 or 7.4 ft. below top of dam.

c. Visual Observations. Small trees and woody vegetation, previously reported as blocking the emergency spillway inlet and covering sections of the channel bottom, are expected to create an obstruction to flow and provide increased flow resistance. The silt-sand spillway channel bottom is expected to be subject to severe erosion in the event of large spillway flows.

The low and high stage principal spillway inlets and trash racks were observed free of debris. No evidence of cavitation damage was discernible on concrete weir surfaces.

d. Overtopping Potential. As previously stated, the required spillway design flood for Jameson Dam is the PMF. Hydrometeorological Report No. 33 indicates the adjusted 6 hour PMF direct rainfall for the subject site area is 22.4 inches. The emergency spillway channel is sized to pass a flood corresponding to 25.6 in. of runoff. Therefore, based on this data, it is considered unlikely the dam embankment will be overtopped. However, the suspected erosion of the emergency spillway channel could be so severe as to effectively breach the spillway-dam abutment.

e. Emergency Spillway Adequacy. Based upon the previously developed data, reservoir storage and spillway hydraulic capacity was found adequate to pass 100 percent of the PMF. Therefore, spillway capacity is considered to be adequate and in accordance with recommended guideline criteria.

f. Downstream Conditions. Gilbert Run flows through a valley flood plain approximately 400 to 2,000 ft. wide, with a gradient of about two (2) percent. The valley flood plain consists predominately of woodland and open pasture. Approximately 10 miles downstream of the dam, Gilbert Run empties into the Wicomico River. Gilbert Run passes under State Routes No 6, No. 232, and No. 234, and two county roads through concrete box culvert bridges and corrugated metal culverts, respectively. An inhabited house and the two county roads are considered likely to be inundated during high flood flows. About six (6) homes are expected to be damaged or destroyed, with loss of life probable, in the event of a dam failure.

SECTION 6
STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

a. Visual Observations

1. Embankment. Seepage, presumably emanating from embankment blanket drains, is not considered to have a significant effect on dam stability at the present time. However, due to the erodible nature of the silt-sand embankment soils and the evidence of deposited silt-sand material, periodic monitoring of seepage discharge is advised as a precautionary measure. Overall, visual observations of embankment conditions indicate the structural performance of dam embankment is good at the present time.

2. Emergency Spillway. As discussed in Section 3, a loosely rooted grass covers the low to non-plastic silt-sand channel bottom of the emergency spillway. Soil Conservation Service design calculations indicate channel flow velocities will reach a maximum of 5.5 ft./sec. at the control section. According to Corps of Engineers (EM 1110-2-1601), and ASCE Irrigation Research criteria, maximum permissible velocities for these soils range from about two (2) to about four (4) ft./sec. Therefore, based on this data and visual observations, the erosion resistance of the spillway channel is considered inadequate. An investigative study should be implemented to more accurately evaluate the erosion potential of the emergency spillway channel.

3. Principal Spillway Riser and Outlet Pipe. Exposed sections of the spillway riser and outlet pipe did not reveal evidence of structural inadequacies or signs of distress that would significantly affect their performance or the stability of the dam. The inoperable condition of the slide gate is not considered detrimental to the stability of the spillway riser.

b. Design and Construction Data. The design of the dam was based on an evaluation of subsurface conditions, and laboratory determined shear strength, consolidation, and permeability parameters. Non-saturated, consolidated undrained shear strength values of $\phi = 32.5^{o}$, $c = 150$ psf and $\phi = 27^{o}$, $c = 900$ psf, were obtained for the fine silty and clayey sand foundation materials and sand-silt embankment materials, respectively. These obtained shear strength values are considered reasonable for the soil materials they represent. Circular slope stability analyses were conducted on the upstream and downstream embankment slopes based on an assumed phreatic surface sloping from the emergency spillway crest level to the

downstream filter trenches and the above shear strength parameters. A minimum factor of safety against shear failure of 1.63 was obtained from four (4) trial circles for a non-earthquake condition. However, critical circles may not have been obtained with so few trial circles calculated.

No documents or references were found to indicate seepage analyses were performed.

Available principal spillway design calculations and drawings were reviewed for structural adequacy. Based upon this review, the basic components of the spillway riser and anti-vortex slab are considered structurally adequate.

c. Operating Records. Operating records are not maintained at the dam facility. However, the structural stability of the dam embankments and appurtenant structures is not considered to be affected by the operation of the slide gate.

d. Post-Construction Changes. There are no reports or evidence of post-construction changes made at this dam facility.

e. Seismic Stability. The dam is located in Seismic Zone 1, and the static stability of the dam is considered to be adequate. Therefore, based on the recommended criteria for the evaluation of seismic stability of dams, the structure is presumed to be adequate under earthquake conditions.

SECTION 7
ASSESSMENT AND RECOMMENDATIONS/PROPOSED REMEDIAL MEASURES

7.1 Dam Assessment

a. Evaluation

1. Embankment. Evidence of deposited silt-sand soil in the areas of the seepage blanket drain outlets may be an indication of internal erosion, although seepage discharge was observed clear on the dates of the field reconnaissances. These seepage flows should be periodically observed to document if embankment soils are being internally eroded.

   In general, visual observations and a review of design and as-built documents indicate the dam embankment is in relatively good condition at the present time.

2. Principal and Emergency Spillways. Based on review of design documents and visual observations, there is concern the emergency spillway channel will undergo severe erosion when subjected to large flood flows. The erosion may be severe enough to breach the spillway-dam abutment. The principal spillway riser is considered to be structurally adequate and in good condition.

3. Slide Gate. The reservoir drain slide gate, housed in the principal spillway riser, is inoperable and is judged inadequate in its present condition. The normal reservoir pool level can not be drawn down until appropriate maintenance or repairs are made.

4. Flood Discharge Capacity. The hydrological/hydraulic design computations reviewed in this study, indicate the dam can pass the PMF (100%), the required spillway design flood, without overtopping the dam embankment. Therefore, the spillway system is considered adequate and in accordance with recommended criteria.

b. Adequacy of Information. The design information and drawings available for this review were of sufficient detail to adequately conduct a Phase 1 study.

c. Necessity for Further Investigation. The condition of Jameson Dam, as it presently exists, does not require emergency investigation. However, a study is recommended to evaluate the erosion potential of the emergency spillway channel as soon as possible.

   This study is recommended so a more accurate determination can be made of spillway erosion. The scope of this recommended investigation is beyond the intended scope of a Phase 1 study.

d. Urgency. The following recommendations should be implemented as soon as possible.

7.2 Assessment and Recommendations/Proposed Remedial Measures. The following recommendations are presented based on the data obtained:

a. Dam and Appurtenant Structures

1. Implement study to evaluate spillway channel erosion potential. Develop remedial treatment measures to reduce risk of erosion.

2. Obtain a qualified professional engineer, experienced in the design of small dams, to periodically monitor wet zones for change in conditions, and discharge from seepage blanket drains for evidence of transported embankment soils.

3. Repair and maintain the outlet pipe slide gate and lifting mechanisms. Extend gate valve control shaft.

4. Backfill, tamp, and resod eroded gullies and footpaths.

5. Remove all trees and woody vegetation from the emergency spillway inlet, channel, and dam embankment slopes.

6. Improve drainage gradient of seepage diversion channel at toe of downstream embankment. Remove vegetation obstructions.

7. Fill in and grade as necessary tire ruts and settled depressions to level dam crest to original grade.

b. Operation and Maintenance Procedures

1. Develop a formal flood surveillance and warning plan. plan to include, but not limited to, the following:

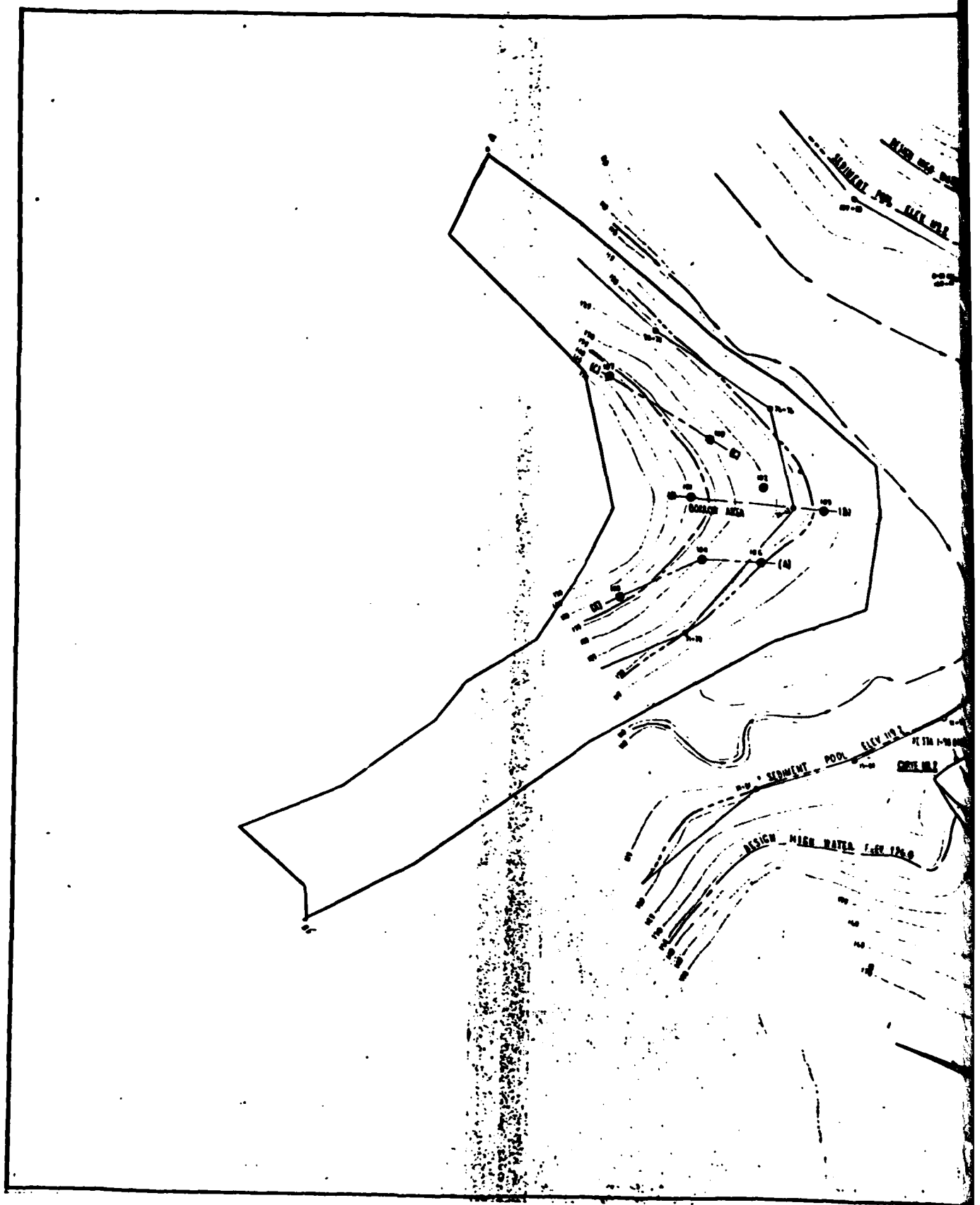
(a) Surveillance. Around-the-clock surveillance of dam embankments, reservoir levels, and spillway channels during periods of unusually heavy rainfall.

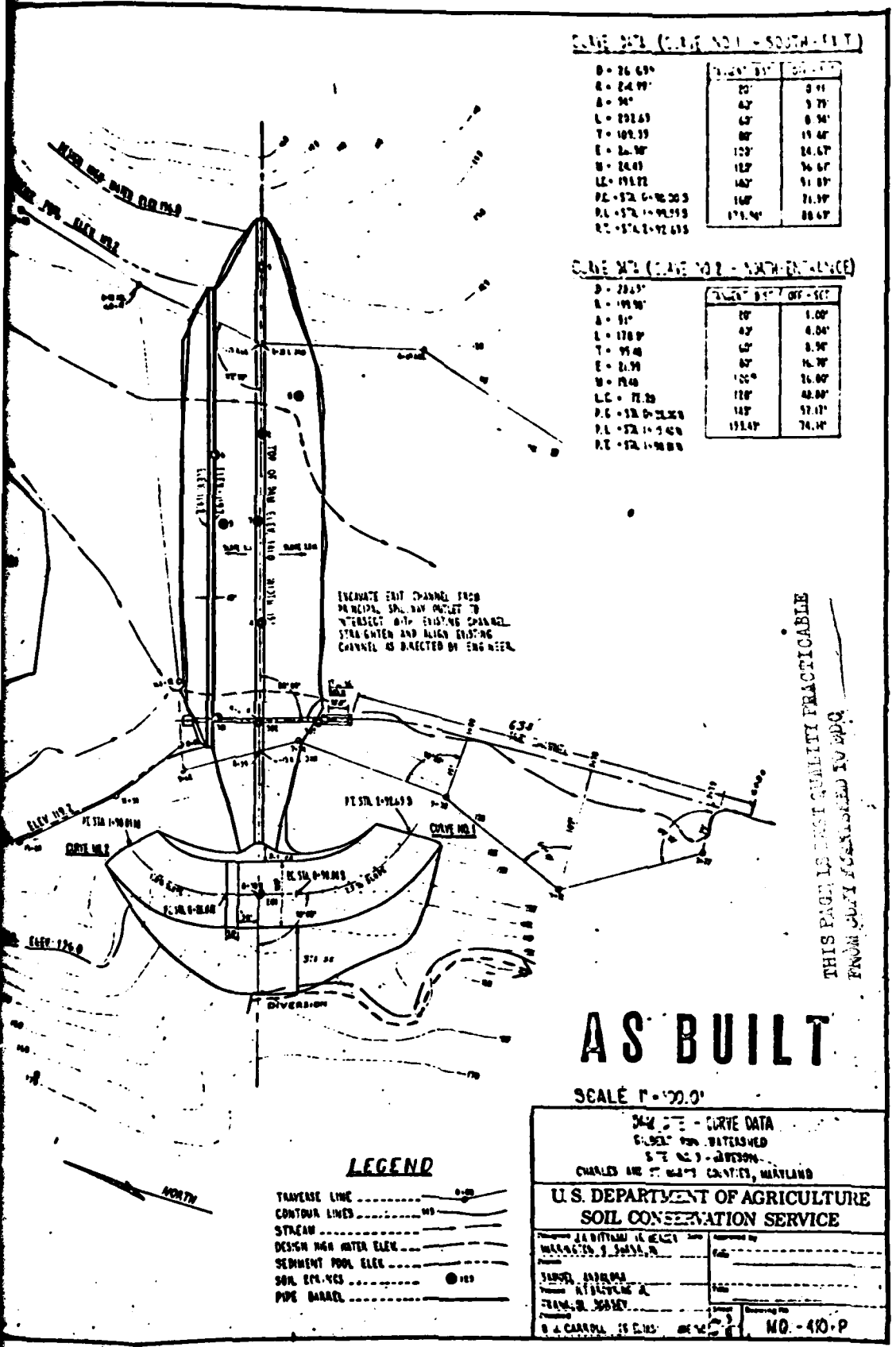
(b) Warning System. Formal warning procedures to alert downstream residents in the event of expected high flood flows.

(c) Evacuation Plans. Adequate emergency contingency plans to evacuate downstream residents in the event or threat of a dam failure.

(2) Develop a more thorough and active maintenance and inspection program at the dam facility. Program should include frequent maintenance and exercising of the reservoir drain slide gate and observation monitoring of discharge from seepage blanket drains.

PLATES


SEDIMENT POOL
DESIGN HIGH WATER



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AS BUILT

SCALE 1" = 100.0'

LEGEND

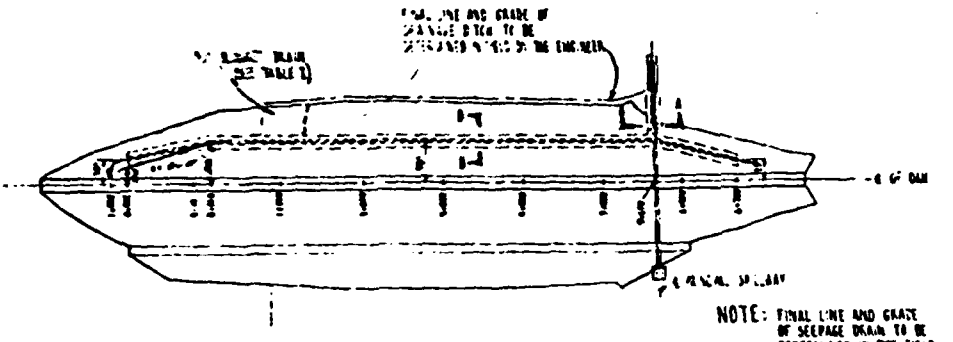
TRAVERSE LINE .....
CONTOUR LINES .....
STREAM .....
DESIGN HWA WATER ELEV. ....
SEDIMENT POOL ELEV. .....
SOIL EXPLORES .....
PIPE BARREL .....

CURVE DATA
WATERSHED
DIVERSION
CHARLES AND ST. MARY'S COUNTIES, MARYLAND

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

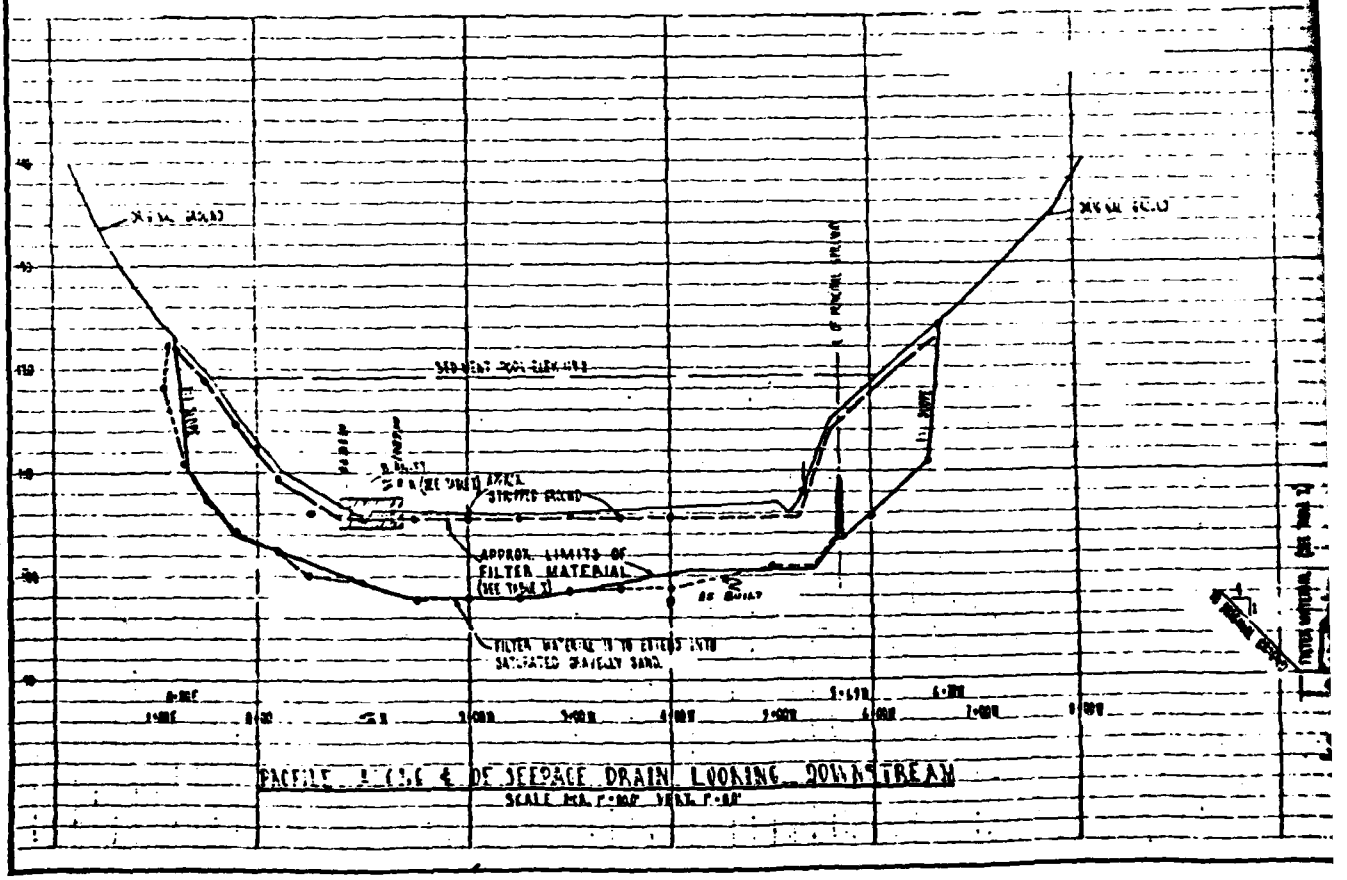
MD.-410-P

PLATE NO. 1

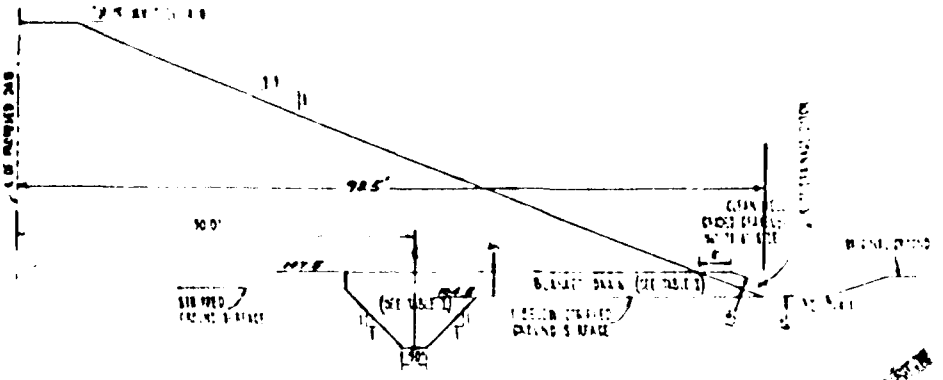


NOTE: FINAL LINE AND GRADE OF SEEPAGE DRAIN TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

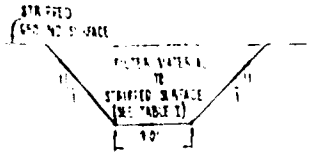
PLAN VIEW OF SEEPAGE DRAIN SCALE 1"=100'



FACING DOWNSTREAM OF SEEPAGE DRAIN LOOKING DOWNSTREAM
SCALE HOR. 1"=10' VERT. 1"=10'



SECTION THRU BLANKET DRAIN SCALE 1"=10'



SECTION B-B

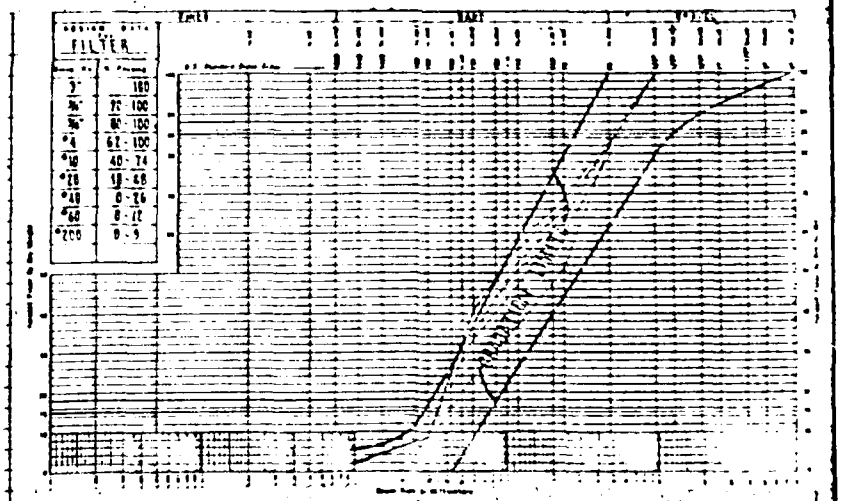
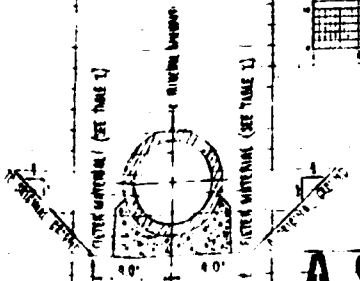


TABLE 1



SECTION A-A

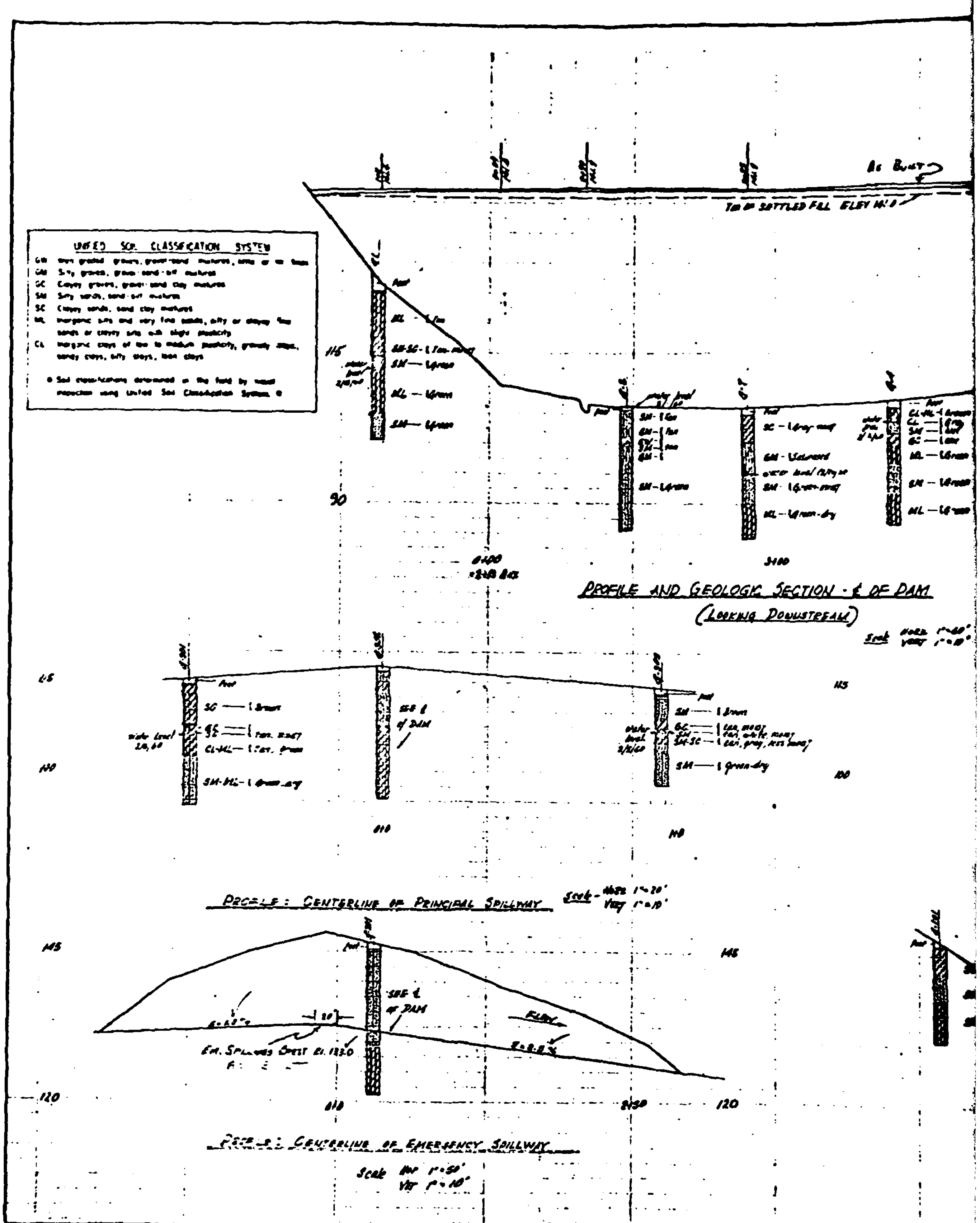
AS BUILT

SEEPAGE DRAIN DETAILS
GILBERT RUN WATERSHED
SITE NO. - JAMESON
CHARLES AND ST MARYS COUNTIES, MARYLAND

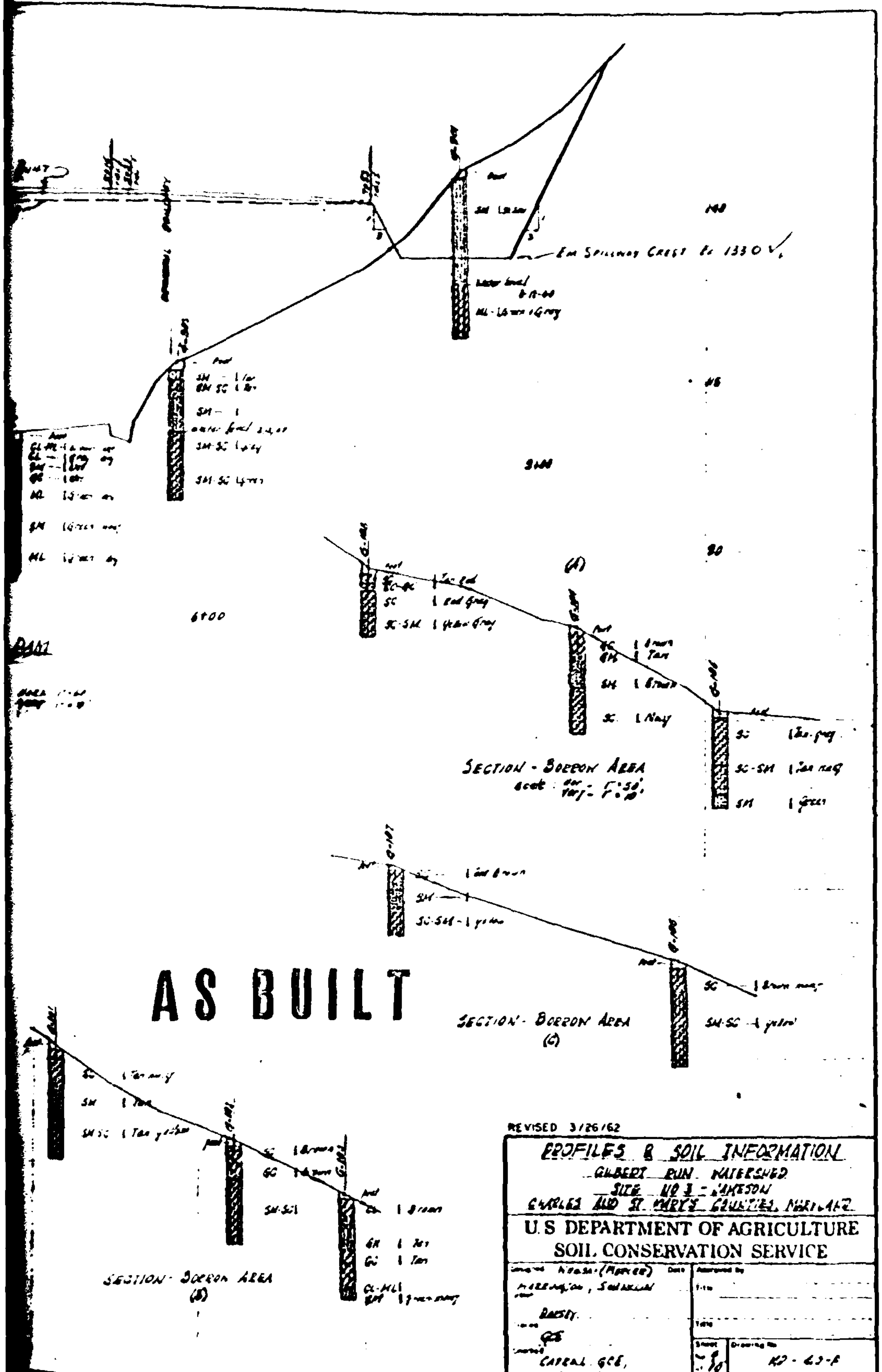
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

MD-401-P

PLATE NO. 2



PROFILE AND GEOLOGIC SECTION - ¢ OF DAM
(LOOKING DOWNSTREAM)
PROFILE: CENTERLINE OF PRINCIPAL SPILLWAY
PROFILE: CENTERLINE OF EMERGENCY SPILLWAY
EM. SPILLWAY CREST EL. 133.0
FLOW
SEE ¢ of DAM



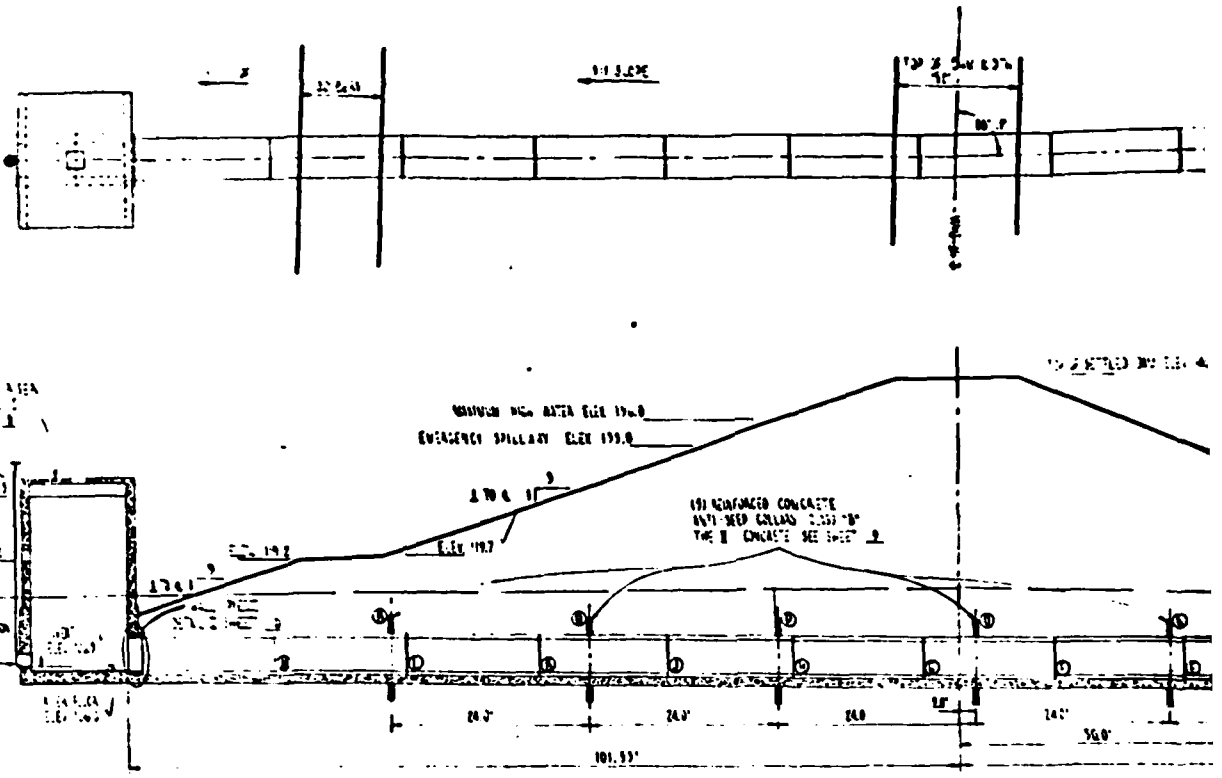
REVISED 3/26/62

PROFILES & SOIL INFORMATION
GILBERT RUN WATERSHED
SITE NO 3 - JAMESON
CHARLES AND ST. MARY'S COUNTIES, MARYLAND

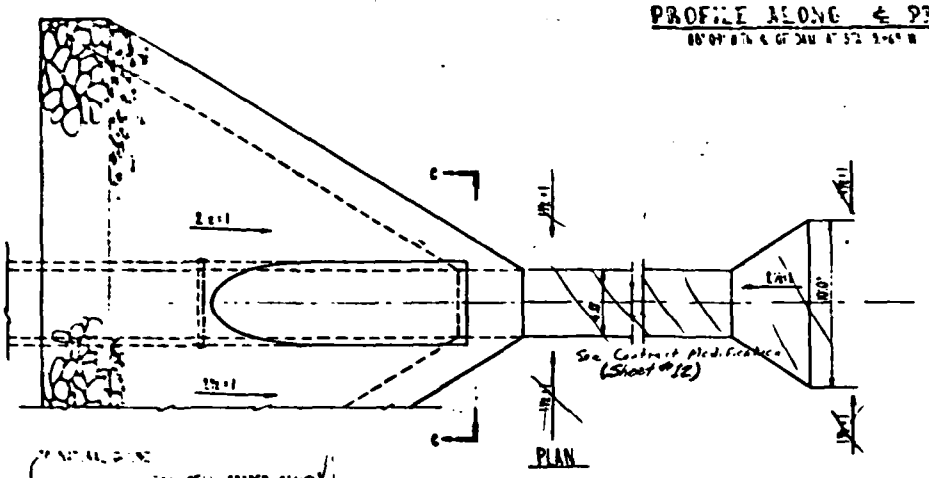
U.S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

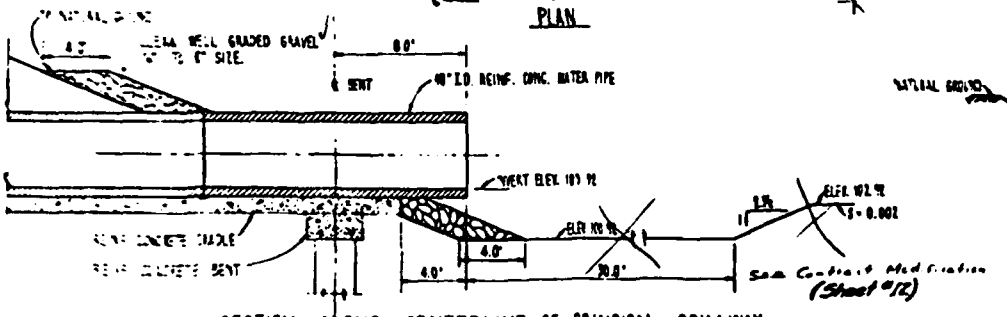
Drawing No. MD-63-F

PLATE NO. 3



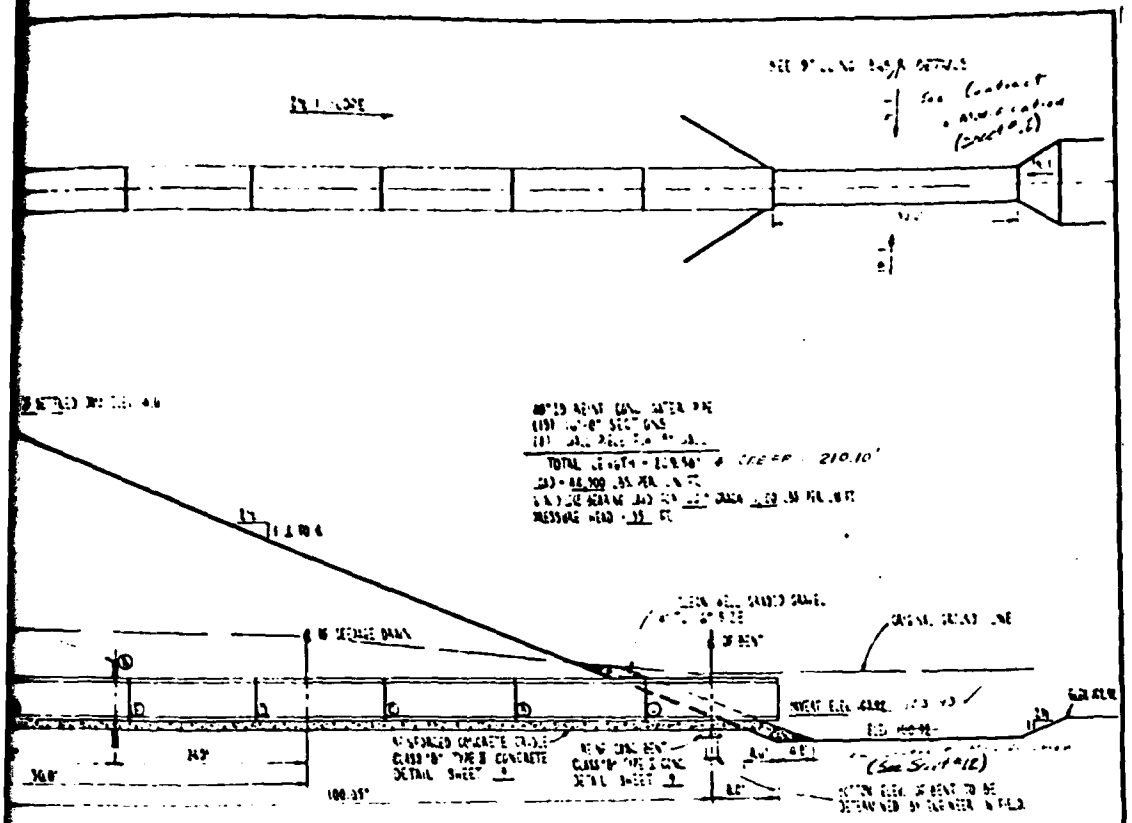
PROFILE ALONG ℄ PRINCIPAL SPILL

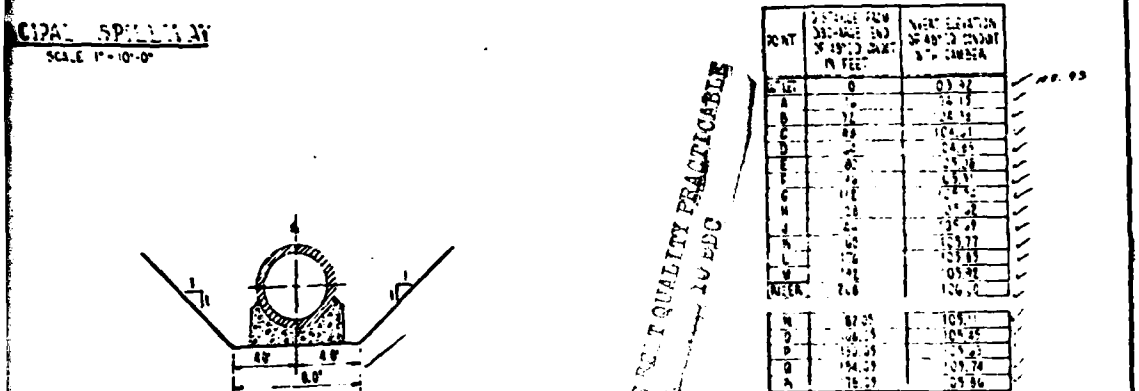


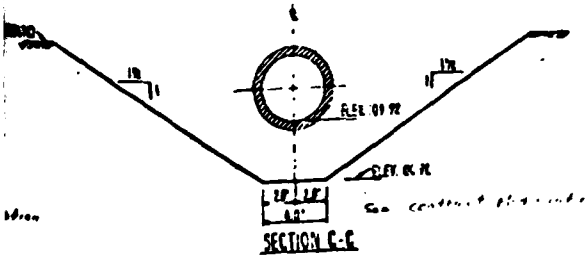


SECTION ALONG CENTERLINE OF PRINCIPAL SPILLWAY

DETAIL OF STILLING BASIN







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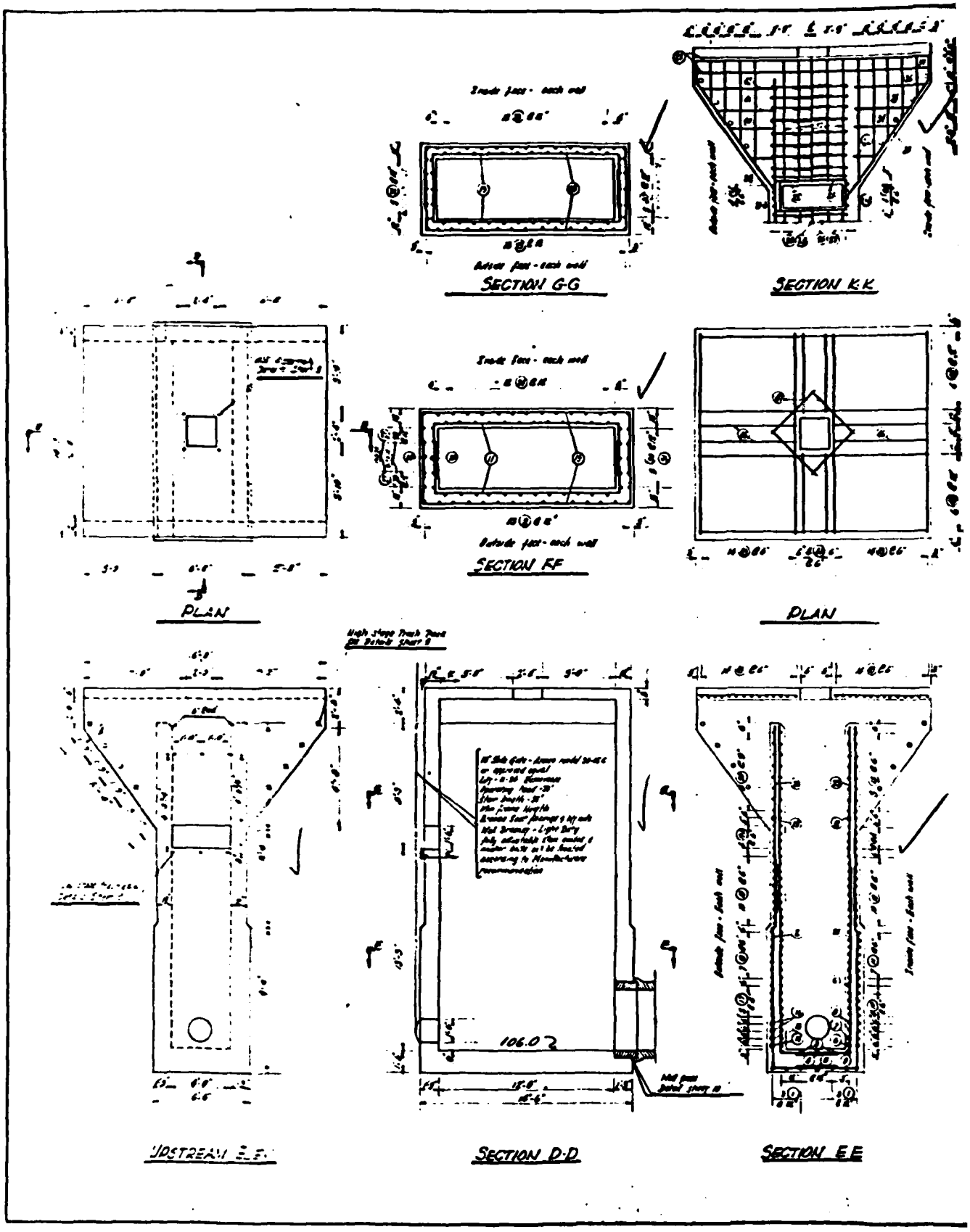
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

PLATE NO. 4


SECTION G-G
SECTION K-K
SECTION F-F
PLAN
PLAN
UPSTREAM E.F.
SECTION D-D
SECTION E-E
106.0

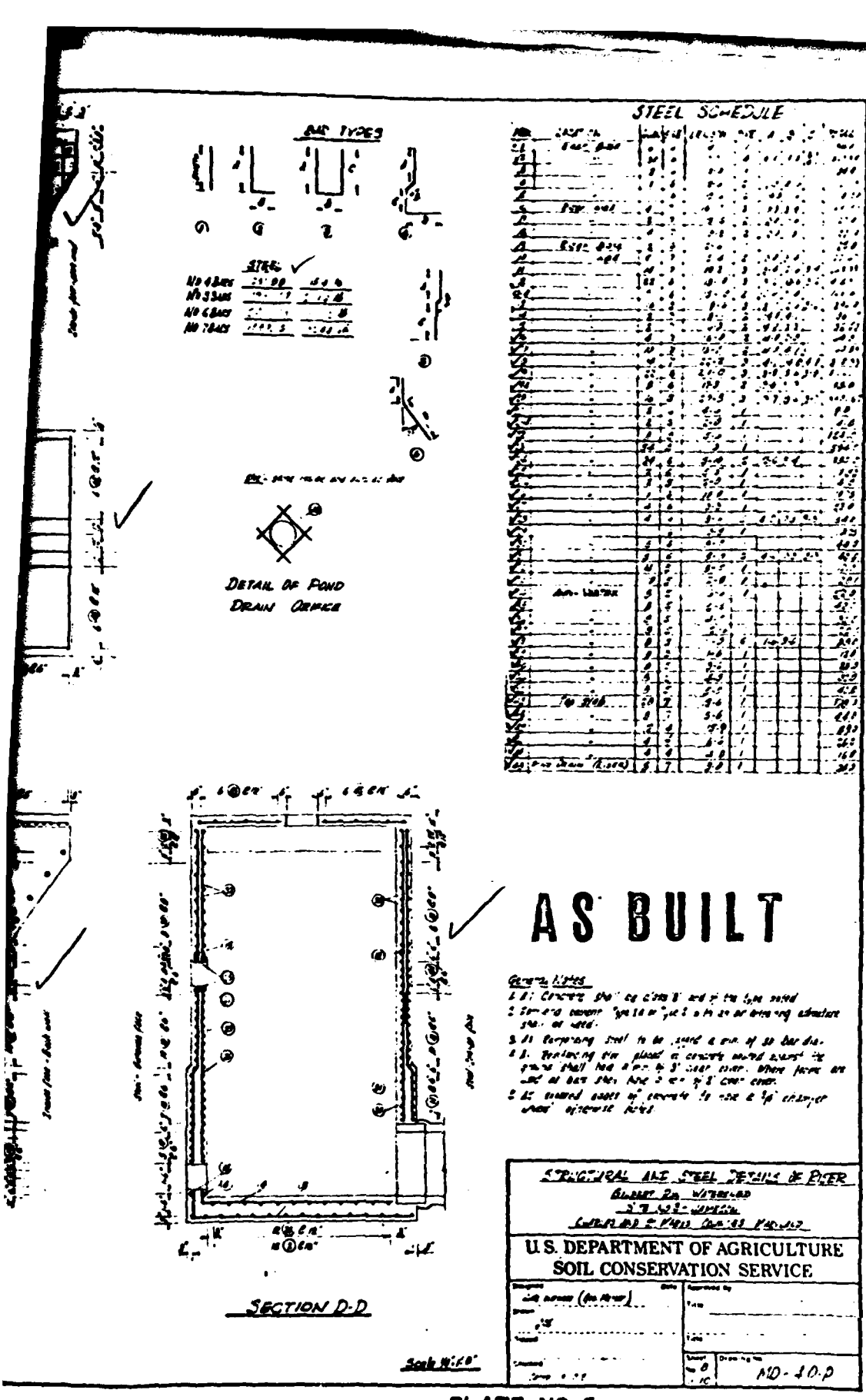
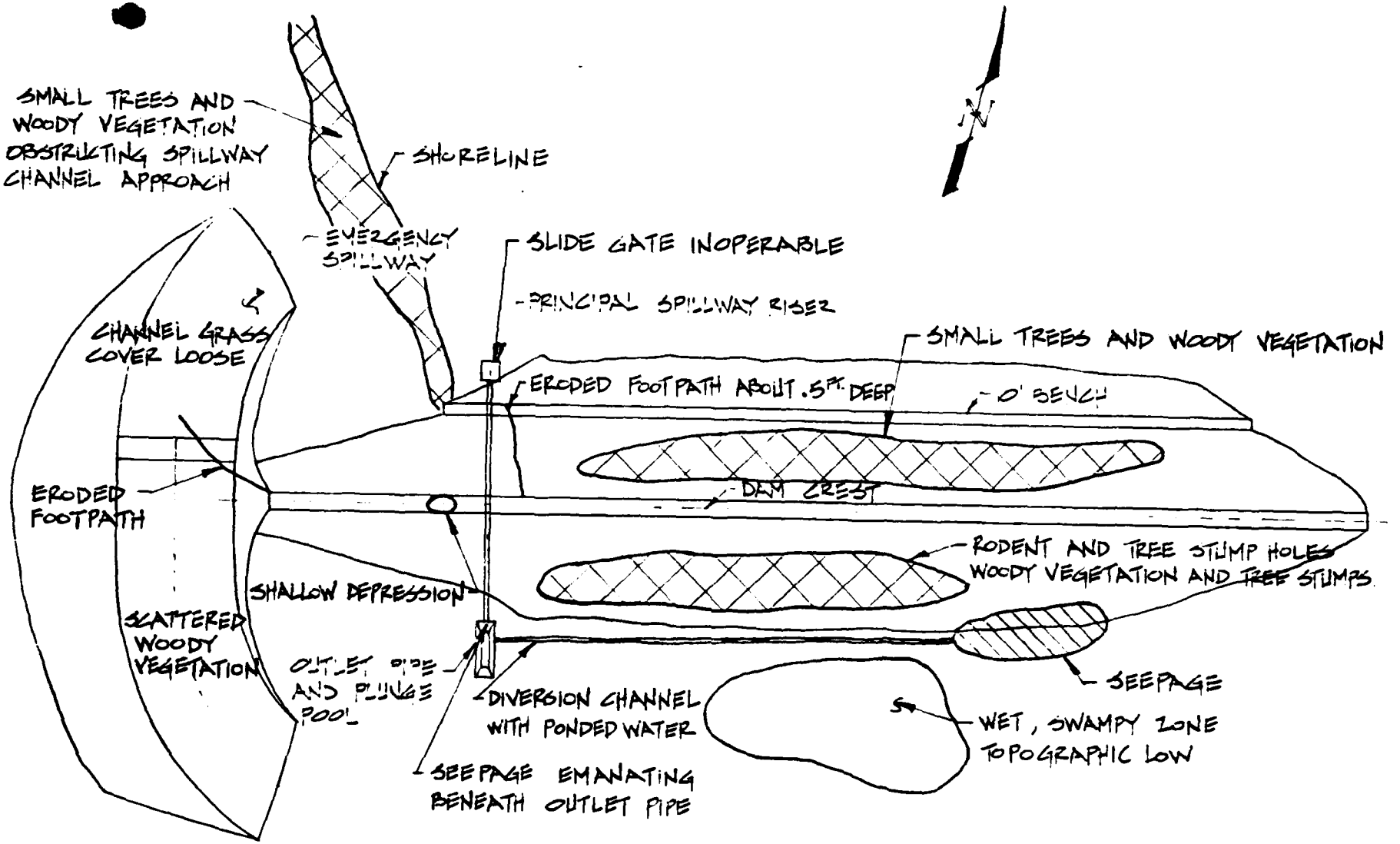


PLATE NO. 5

APPENDIX A

FIELD SKETCH AND VISUAL OBSERVATIONS CHECKLIST



FIELD SKETCH JAMESON DAM

CHECK LIST
VISUAL INSPECTION
PHASE I

Name Dam Jameson County Charles State Maryland National ID # MD 38

Type of Dam Earthfill Hazard Category Class I - High Hazard

Date(s) Inspection 3/21/79 Weather Clear Temperature 65°F

Inspection Review Date 4/24/79

Pool Elevation at Time of Inspection *119.2 ft. M.S.L. Tailwater at Time of Inspection *± 101 ft. M.S.L.
*Pool at riser orifice elevation
*Approx. 3 ft. below invert of pipe outlet

Inspection Personnel:	Ackenheil & Associates	Water Resources Admin.	Soil Conservation Service
	P. A. D'Amato	J. Smith	R. Ensor
	T. E. Debes	T. Moynahan	D. Lloyd
	J. D. Hainley	D. Moore	D. Rames
			A. Stahl

Recorder P. A. D'Amato

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS*
SURFACE CRACKS	None observed.	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None observed.	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Several trees (approximately 4 in. dia.) have been cut down on the upstream slope. Upstream slope thickly covered with grass and crown vetch. Footpath eroded into upstream slope near intake tower. Footpath eroded into west abutment at spillway on upstream slope. No noticeable erosion on downstream slope - thickly covered with grass and crown vetch. Several small trees have been cutdown on downstream slope (approx. 4 - 6 in. dia.) Several small holes evident on downstream slope - either caused by rodents or where trees have been removed.	
VERTICAL AND HORIZONTAL ALIGNMENT OF THE CREST	No noticeable horizontal or vertical misalignment except as noted in "settlement".	
RIPRAP FAILURES	Not applicable.	

*REFER TO REPORT SECTIONS 3 AND 7

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SETTLEMENT	Small dished depression in dam crest near west abutment. Depression about 0.2 ft. in depth, relative to existing dam crest level.	
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Minor eroded gulley on west abutment junction of spillway. Gulley erosion predominately attributed to foot and motorbike traffic.	
ANY NOTICEABLE SEEPAGE	Clear seepage emanating from assumed location of blanket drain, in toe of downstream embankment. Evidence of transported sand material at area of drain discharge. Seepage flow about 5 gpm. Wet, swampy area noted 100 ft. downstream of dam and along side the seepage diversion channel. Seepage also observed emanating from underneath outlet pipe structure. The seepage appears to have transported a fine sand-silt material.	
STAFF GAGE AND RECORDER	None	
DRAINS	Blanket drain appears to be functioning properly as noted above.	

OUTLET WORKS

(Pond Drain)

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	Visible portions of concrete surfaces and outlet works are in good condition. No cracking or spalling evident.	
INTAKE STRUCTURE	Exposed concrete surfaces and trash racks in good condition. Slide gate and lifting mechanisms are not operational. Stem, lift nut, and collar supports are slightly rusted, but appear in good condition. Stem too short; difficult to apply leverage to turn.	
OUTLET STRUCTURE	No excessive deterioration or erosion observed.	
OUTLET CHANNEL	Plunge pool and earth channel observed free of flow obstructions. Plunge pool and channel dimensions approximate those shown on design drawings.	
EMERGENCY GATE	None	

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	High stage principal spillway weirs showed no evidence of cavitation damage or deterioration.	
APPROACH CHANNEL	Clump of small trees and woody vegetation obstructing spillway channel inlet. Channel grass cover is loosely rooted and can be easily "kicked up".	
DISCHARGE CHANNEL	Channel stable and free of debris. See previous comments.	
BRIDGE AND PIERS	None.	

GATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE SILL	N/A	
APPROACH CHANNEL	N/A	
DISCHARGE CHANNEL	N/A	
BRIDGE AND PIERS	N/A	
GATES AND OPERATION EQUIPMENT	N/A	

INSTRUMENTATION

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None	
OBSERVATION WELLS	None	
WEIRS	None	
PIEZOMETERS	None	
OTHER	N/A	

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Reservoir slopes have mild inclinations, are well vegetated, and appear stable. No evidence of landslides, embankment sloughing, or shoreline erosion was observed.	
SEDIMENTATION	Reservoir and outlet pipe discharge water clear. No excessive sedimentation was evident.	

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	The downstream channel is relatively free of debris and other obstructions that would affect the discharge capacity of the spillway or outlet pipe.	
SLOPES	Channel embankment slopes have inclinations of about 2H:1V. There was no apparent evidence of slope instability immediately downstream from the dam.	
APPROXIMATE NO. OF HOMES AND POPULATION	One residence is located immediately downstream of the dam. Approximately six (6) inhabited residences are located in the downstream flood plain within a 10 mile reach.	

APPENDIX B

CHECKLIST ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION PHASE I

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM Jameson

ID # NDI #MD 38

ITEM	REMARKS
AS-BUILT DRAWINGS	As-built design drawings were provided by the Soil Conservation Service and are available in State files. See plates 1 through 5.
REGIONAL VICINITY MAP	See Appendix D. U.S.G.S. 7.5 minute quadrangle map showing dam site location.
CONSTRUCTION HISTORY	Design documents and drawings prepared by the Soil Conservation Service in May, 1960. Construction of dam was completed in June 1964 under the supervision of S.C.S.
TYPICAL SECTIONS OF DAM	See plate 4. Details of earthfill cross section.
OUTLETS - PLAN	See plates 4 and 5 for details of outlet works.
DETAILS	
CONSTRAINTS	
DISCHARGE RATINGS	Available in design report.
RAINFALL/RESERVOIR RECORDS	Not available.

ITEM	REMARKS
DESIGN REPORTS	Gilbert Run Watershed Flood Detention Structure No. 3, design report prepared by Soil Conservation Service, May 20, 1960.
GEOLOGY REPORTS	Brief summary included in design report. Geology report prepared by James Tazelaar, Geologist, May 2, 1960.
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS DAM STABILITY SEEPAGE STUDIES	Hydrology computation summaries, flood hydrographs, rating curve and hydraulic capacity calculations, and static slope stability summaries obtained from design report, prepared by Soil Conservation Service.
MATERIALS INVESTIGATIONS BORING RECORDS LABORATORY FIELD	See plate 3 for typical subsurface profile. Test boring and test pit data provided in design report and on design drawings. Laboratory shear strength, consolidation, density, permeability, and soil classification test data included in design report.
POST-CONSTRUCTION SURVEYS OF DAM	None reported.
BORROW SOURCES	See plate 1 for borrow source locations.

ITEM	REMARKS
MONITORING SYSTEMS	None
MODIFICATIONS	None reported.
HIGH POOL RECORDS	None recorded.
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	None reported.
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	None reported.
MAINTENANCE OPERATION RECORDS	Annual maintenance and operation inspection reports available from Soil Conservation Service District office in Laplata, MD.

ITEM	REMARKS
SPILLWAY PLAN SECTIONS DETAILS	See plate 1 for details.
OPERATING EQUIPMENT PLANS & DETAILS	See plate 5 for details.
SPECIFICATIONS	Construction and Material Specifications for Gilbert Run Watershed, Flood Detention Structure No. 3, prepared by Soil Conservation Service, was available for review and can be obtained from State files.
MISCELLANEOUS	1. Operation and Maintenance Agreement, Gilbert Run Watershed Association, February 16, 1962. 2. Amendment No. 1 to Operation and Maintenance Agreement, Gilbert Run Watershed Association, April 15, 1966. 3. Amendment to Operation and Maintenance Agreement, Gilbert Run Watershed Association, June 25, 1969.

APPENDIX C

CHECKLIST HYDROLOGIC AND HYDRAULIC ENGINEERING DATA

CHECK LIST
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: More than 50% wooded, about 20% residential and farm development, remainder open pasture.

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): 119.2 ft. (265 ac.-ft.)

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): 141.0 ft. (2,900 ac.-ft.)

ELEVATION MAXIMUM DESIGN POOL: 136.0 ft.

ELEVATION TOP DAM: 141.0 ft.

EMERGENCY SPILLWAY

a. Elevation 133.0 ft.
b. Type Vegetated Earth Channel
c. Width 100 ft.
d. Length 500 ft., curved channel
e. Location Spillover West abutment
f. Number and Type of Gates None

OUTLET WORKS

a. Type Concrete intake structure and 48 in. R. C. outlet pipe
b. Location 200 ft. from west abutment and spillway
c. Entrance Inverts Low stage 119.2 ft.; high stage 127.5 ft.
d. Exit Inverts 104.0 ft.
e. Emergency Draindown Facilities Slide gate housed in bottom of intake structure. Hand operated by stem and lifting nut.

HYDROMETEOROLOGICAL GAGES

a. Type None
b. Location N/A
c. Records None

MAXIMUM NON-DAMAGING DISCHARGE Unknown

APPENDIX D

PHOTOGRAPHS

PHOTOGRAPH 1 View of upstream embankment slope showing woody vegetation growth and stockpile of cut trees.

PHOTOGRAPH 2 View of downstream embankment slope showing woody vegetation growth and tree slumps. Note line of tree growth along toe of embankment.

PHOTOGRAPH 3 Overview of dam crest. Note vehicular tire ruts on crest.

PHOTOGRAPH 4 View of wet zone located immediately below the downstream embankment toe.

1

2

3

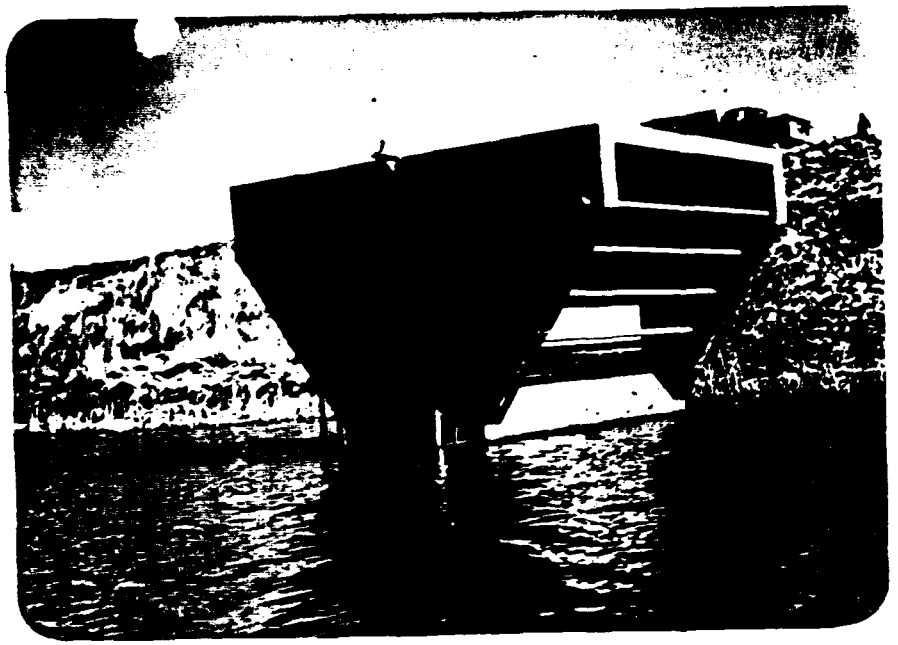
4

PHOTOGRAPH 5 View of principal spillway riser. Note short length of slide gate control stem above anti-vortex slab.

PHOTOGRAPH 6 Overview of principal spillway riser and emergency spillway inlet channel (upper left hand corner of photograph). Note strip of small trees and woody vegetation obstructing channel inlet.

PHOTOGRAPH 7 View of outlet pipe. Seepage was noted emanating underneath pipe.

PHOTOGRAPH 8 View of inhabited residence located 800 ft. directly downstream of dam.



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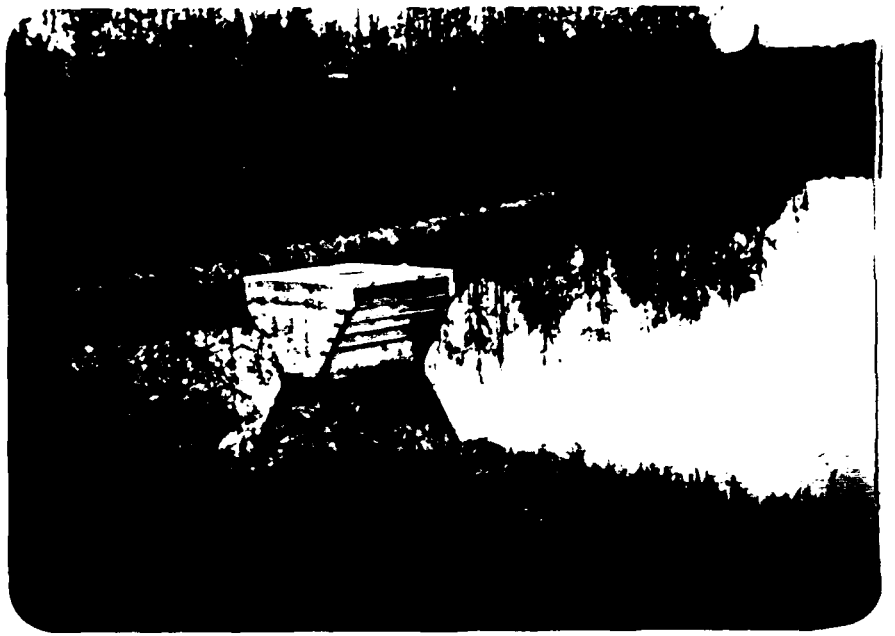

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7

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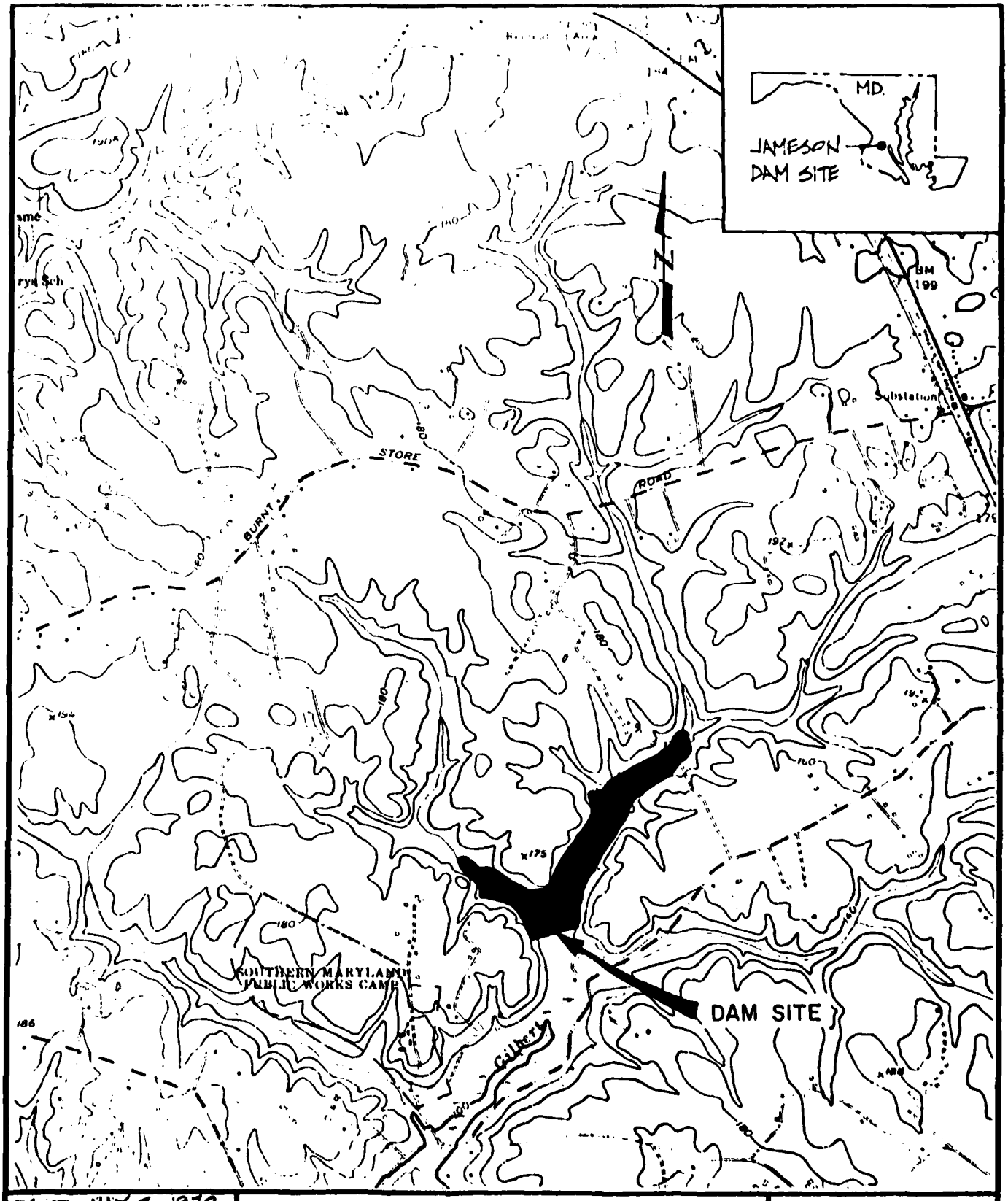
APPENDIX E

REGIONAL LOCATION PLAN



DATE: MAY 7, 1979	NATIONAL DAM INSPECTION PROGRAM	LOCATION PLAN JAMESON DAM
SCALE: 1:24000		
DR: JLM CK: TED	ACKENHEIL & ASSOCIATES CONSULTING ENGINEERS BALTIMORE, MD.	
DWG. NO. E1		

APPENDIX F

REGIONAL GEOLOGY

JAMESON DAM
NDI ID NO. MD 38
REGIONAL GEOLOGY

The Jameson Dam site is situated on Maryland's Western Shore, within the Coastal Plain Physiographic Province. The dam site is located approximately 2.5 miles southwest of Hughesville on Gilbert Run, and is underlain by the Calvert Formation. The Calvert Formation belongs to the Miocene Chesapeake Group and consists of semi-consolidated beds of clay, clayey silt, sands, and diatomaceous earth. Typically, the highly diatomaceous sediments tend to function as an aquiclude. The Calvert Formation is unconformably overlain by the Pleistocene Columbia Group's Sunderland Formation, and is exposed in a belt approximately one-half mile wide surrounding Gilbert Run.

The Sunderland Formation consists of loose sand, silt, and gravel slope wash. Both the Calvert and Sunderland Formations lack any significant structure. They generally strike northeast to southwest and dip gently, 10 ft. per mile to the southeast.

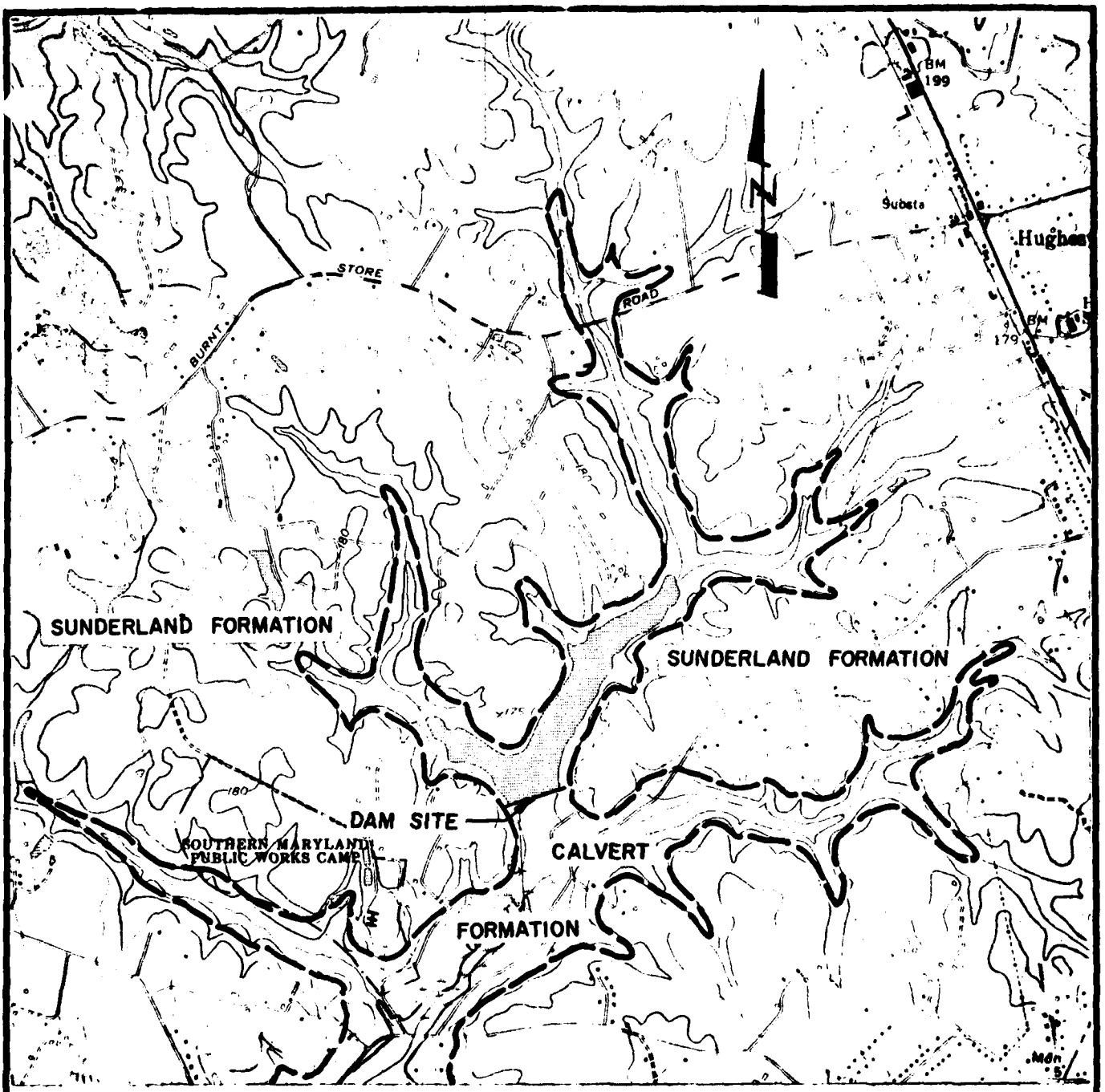
According to design reports, water was found in test bores at the contact between the relatively pervious Sunderland Formation and the underlying, less pervious Calvert Formation. The reservoir foundation is considered water tight except for the overlying alluvium. Sunderland Formation beds surrounding the reservoir contain pervious layers above El.114 ft. M.S.L..

References

1. Tazelaar, J. F., 1960, Geology Report of Jameson Dam Site, Charles County, Maryland.

2. Maryland Geological Survey, 1939, Map of Charles County showing Geological formations.

3. Glaser, John D., Maryland Geological Survey Investigation #15, Geology and Mineral Resources of Southern Maryland.



HUGHESVILLE QUADRANGLE, CHARLES COUNTY, MARYLAND

SCALE: 0 ½ MILE 1: 24000

CONTOUR INTERVAL 20FT. DATUM IS MEAN SEA LEVEL

FORMATIONAL CONTACT

DATA OBTAINED FROM MARYLAND GEOLOGIAL SURVEY'S MAP OF CHARLES COUNTY SHOWING THE GEOLOGICAL FORMATIONS, 1939.

DATE: MAY 7, 1979	NATIONAL DAM INSPECTION PROGRAM	SITE GEOLOGY OF JAMESON DAM
SCALE: AS SHOWN		
DR: JLM CK: TED	ACKENHEIL & ASSOCIATES CONSULTING ENGINEERS BALTIMORE, MD.	
DWG. NO. F 1		